

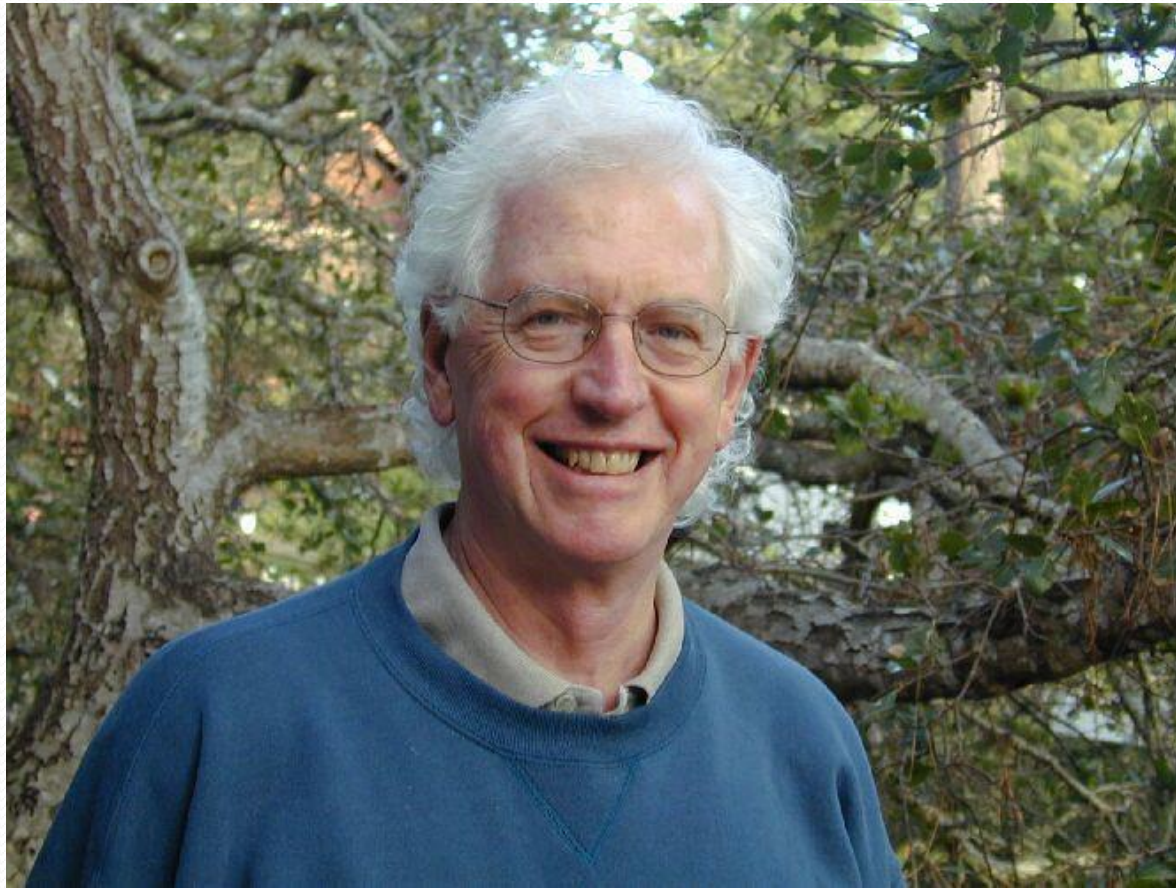
# Safeguarding California: Preparing for Climate Risks

*an update to the  
2009 California Climate Adaptation Strategy*

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Public Workshop & Listening Session





**Ken Topping**  
**City and Regional Planning**  
**College of Architecture and Environmental Design**  
**Cal Poly San Luis Obispo**

# Climate Change, Emergency Management, and Community Resilience

Ken Topping, FAICP

Lecturer/Senior Advisor

2013 State Hazard Mitigation Plan

City and Regional Planning Department

Cal Poly San Luis Obispo

Wednesday, October 2, 2013



# Large Disasters: the “New Normal?”

- Disasters are increasing due to:
  - Natural hazards
  - Development
  - Poor planning
  - **Climate change**
- Some communities are more vulnerable
- No community is immune



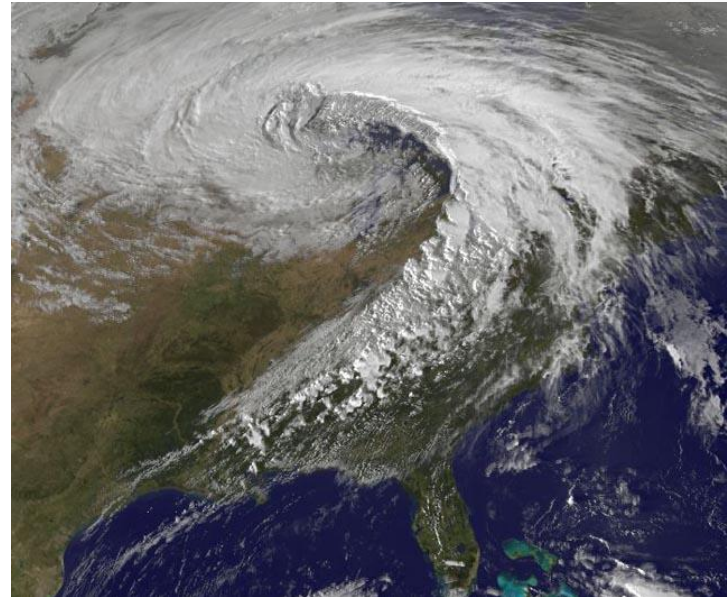
Southern California Wildfires, 2003



New Orleans, 2005

# Climate Change → More Disasters

- **Threat** – Climate change from global warming is creating *more, bigger, and worse* disasters nationally and globally
- **Impacts** – California is pursuing strategies to mitigate global warming through limiting greenhouse gas (GHG) emissions
- **Challenge** – Despite California innovations like AB 32 (Global Warming Solutions Act of 2006), CO<sub>2</sub> emissions are rising
- **Unavoidable** impacts require adaptation

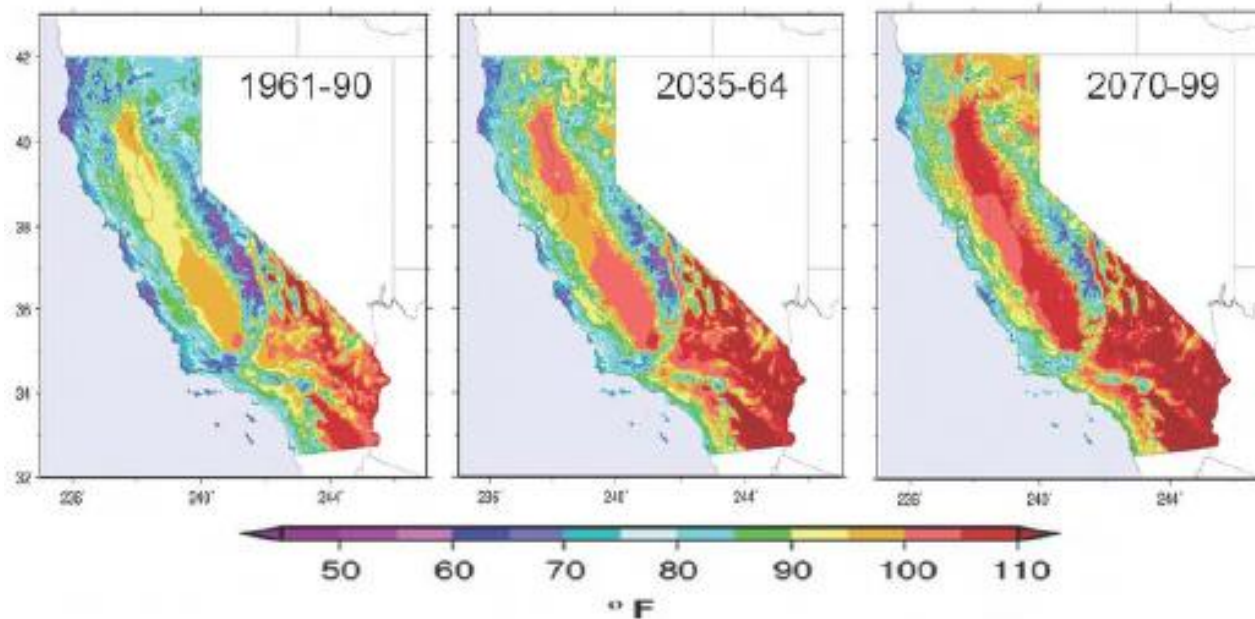


Source: NASA

# Temperature Increases 1961 – 2099

**California is growing hotter and dryer**

Figure 1. California Historical & Projected July Temperature Increase 1961-2099

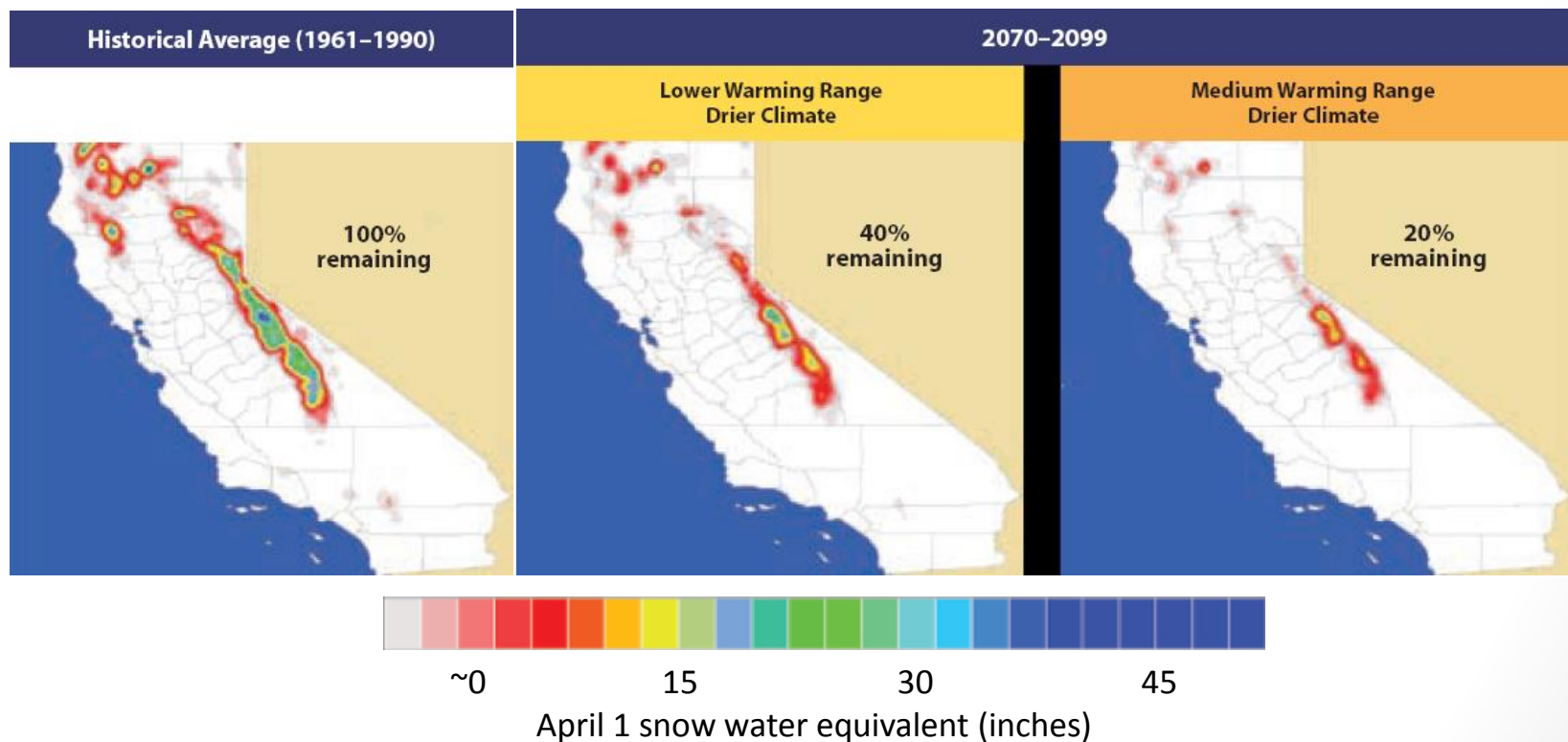


Source: Dan Cayan et al. 2009.



# Snow Pack Reduction 1961-2099

**Less rainfall → reduced snow pack → lower water supply**

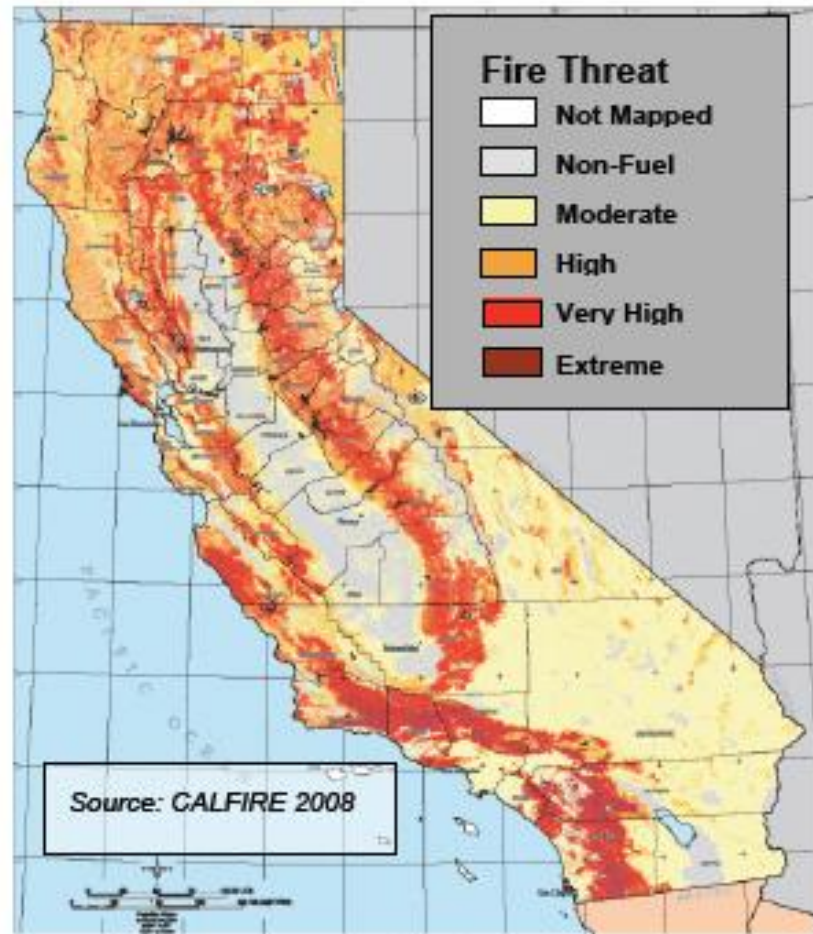


# Increased Wildfire Risk

“Larger and more frequent wildfires will impact California’s economy by increasing fire suppression and emergency response costs, damages to homes and structures, interagency post-fire recovery costs, and damage to timber, water supplies, recreation use and tourism.”

(Source: Climate Adaptation Strategy, 2009)

Figure 11: Increasing Wildfire Risk





# Sea Level Rise

San Francisco Airport will be flooded before the end of the century unless protective measures are taken

Light blue = 16 inches by 2050

Dark blue = 55 inches by 2100

*Figure 23: Projected sea level rise around San Francisco Airport (SFO). (Source: San Francisco Bay Conservation and Development Commission)*



Source: BCDC

# Things to keep in mind

- Climate change is gradual and hard to notice
- But we can expect:
  - hotter temperatures
  - drying of regions
  - more intense wildfires
  - lowered water supply
  - more violent weather
  - more flooding
- No single event is proof of climate change impacts, but the pattern is overwhelming

# Lessons from Superstorm Sandy

- **Displacement** – tens of thousands of people
- **Storm surge** – higher than before, tied to sea level rise
- **Devastation** – etched in the minds of New York and New Jersey leaders, community stakeholders
- **Uncertainty** – likelihood of future repeat events
- **Resilience** – how to plan for future emergencies?



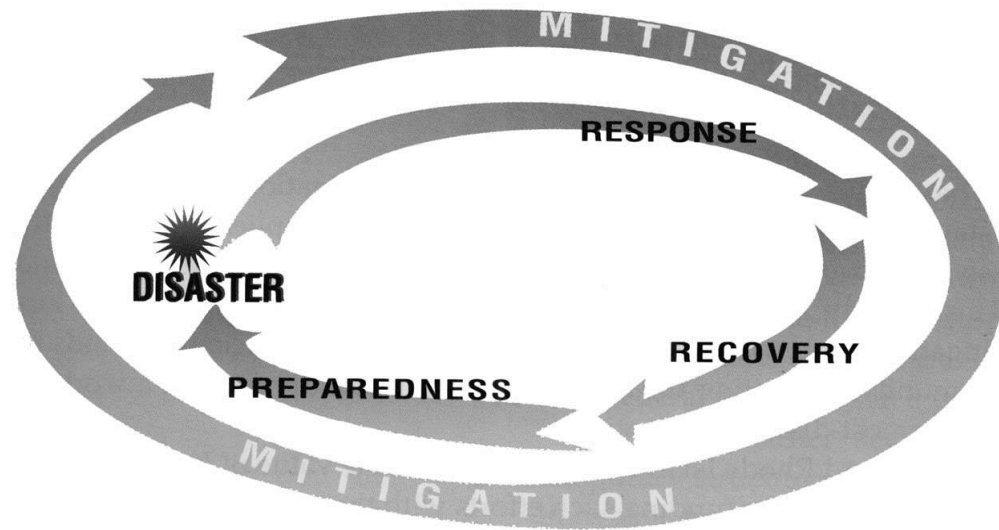
Source: Tulsa World,  
Wayne Parry, AP

# Emergency Management Phases

**Planning is needed  
for each phase:**

- Preparedness
- Response
- Recovery
- Hazard  
Mitigation

Figure 1-7. Phases of Emergency Management:  
The Disaster Life Cycle

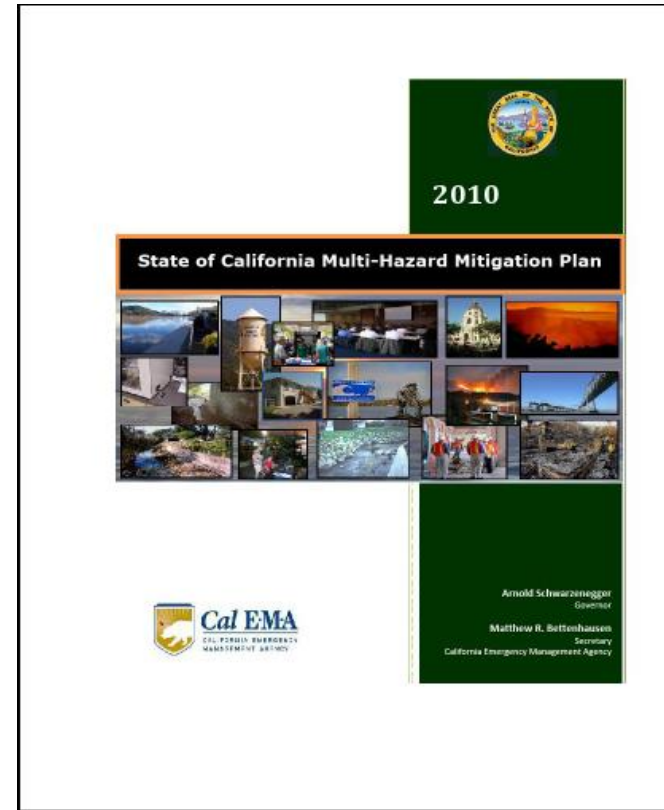


Source: Cecelia Rosenberg, FEMA; designed by Lisa Barton, APA



# State Hazard Mitigation Plan (SHMP)

- Provides framework for state and local mitigation action
- Helps create more resilient and sustainable communities
- Protects California's economy and environment from preventable losses
- Creates benchmarks for future progress

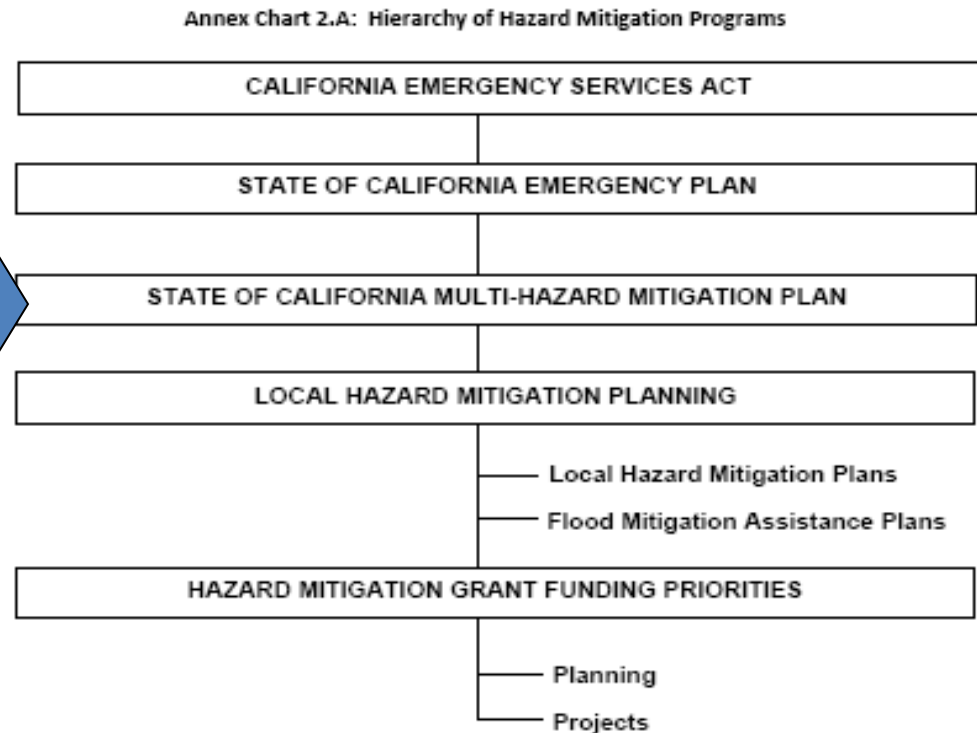
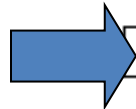


**2013 SHMP due out any day!**

# SHMP: Part of State Emergency Plan (SEP)

## SHMP Benefits:

- Assesses consequences of risks associated with hazards
- Minimizes deaths, injuries, and other negative impacts
- Reduces property and infrastructure losses
- ***Lessens work of emergency responders***
- Assures greater continuity of operations



Source: Cal EMA

# What is Hazard Mitigation?

- **FEMA:** “sustained action to reduce or eliminate long-term risk to human life and property from natural and human-caused hazards”
- **Examples:**
  - Building flood walls
  - Avoiding development in hazardous areas
  - Strengthening structures against earthquakes



**New flood wall protects previously flooded mobile homes from Napa River, 2005, Yountville, California**

# What is Resilience?

- Capacity to:
  - Survive a disaster
  - Keep essential structure and functions
  - Adapt to new post-disaster opportunities

**City of Roseville flooding**



**Roseville EOC moved out of floodplain**

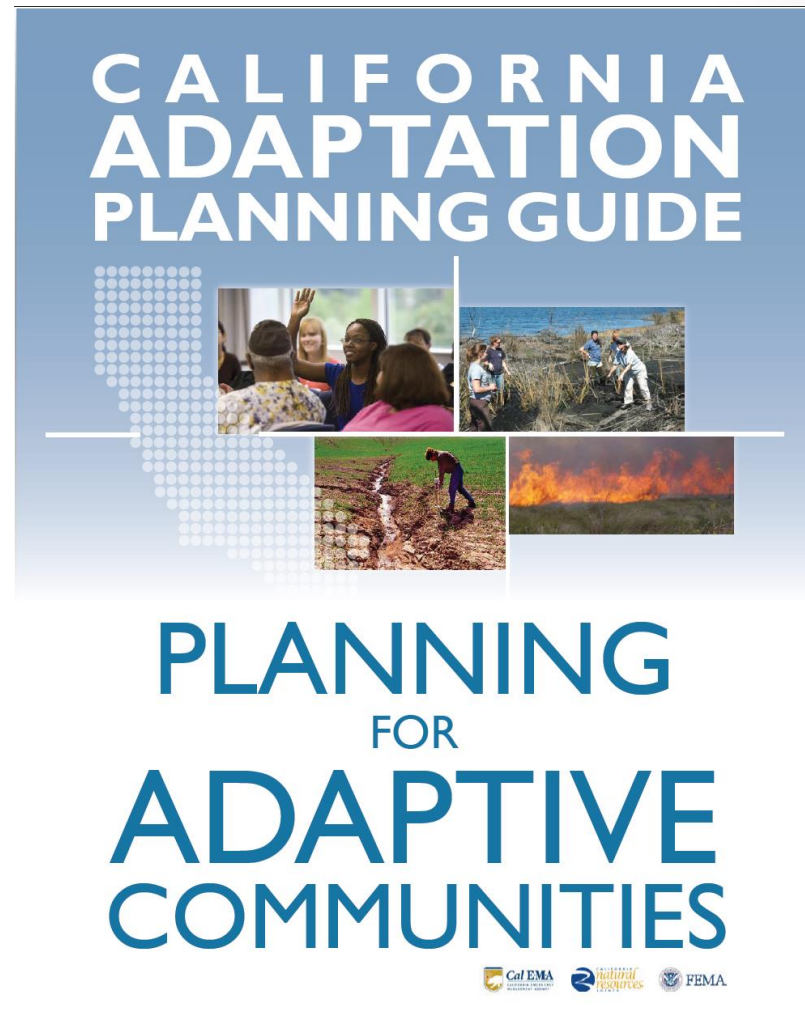
Mitigating hazards after a disaster avoids repeating losses, but mitigating hazards before a disaster is best for building resilience



# Taking Resilience Action: Use the Adaptation Planning Guide (APG)

## Document Series

- [Planning for Adaptive Communities](#) - a step-by-step local and regional climate adaptation plan
- [Defining Local and Regional Impacts](#) - more in-depth understanding of how climate change can affect a community
- [Understanding Regional Characteristics](#) - identifies climate impact regions
- [Identifying Adaptation Strategies](#) - adaptation strategies communities can use to meet local needs



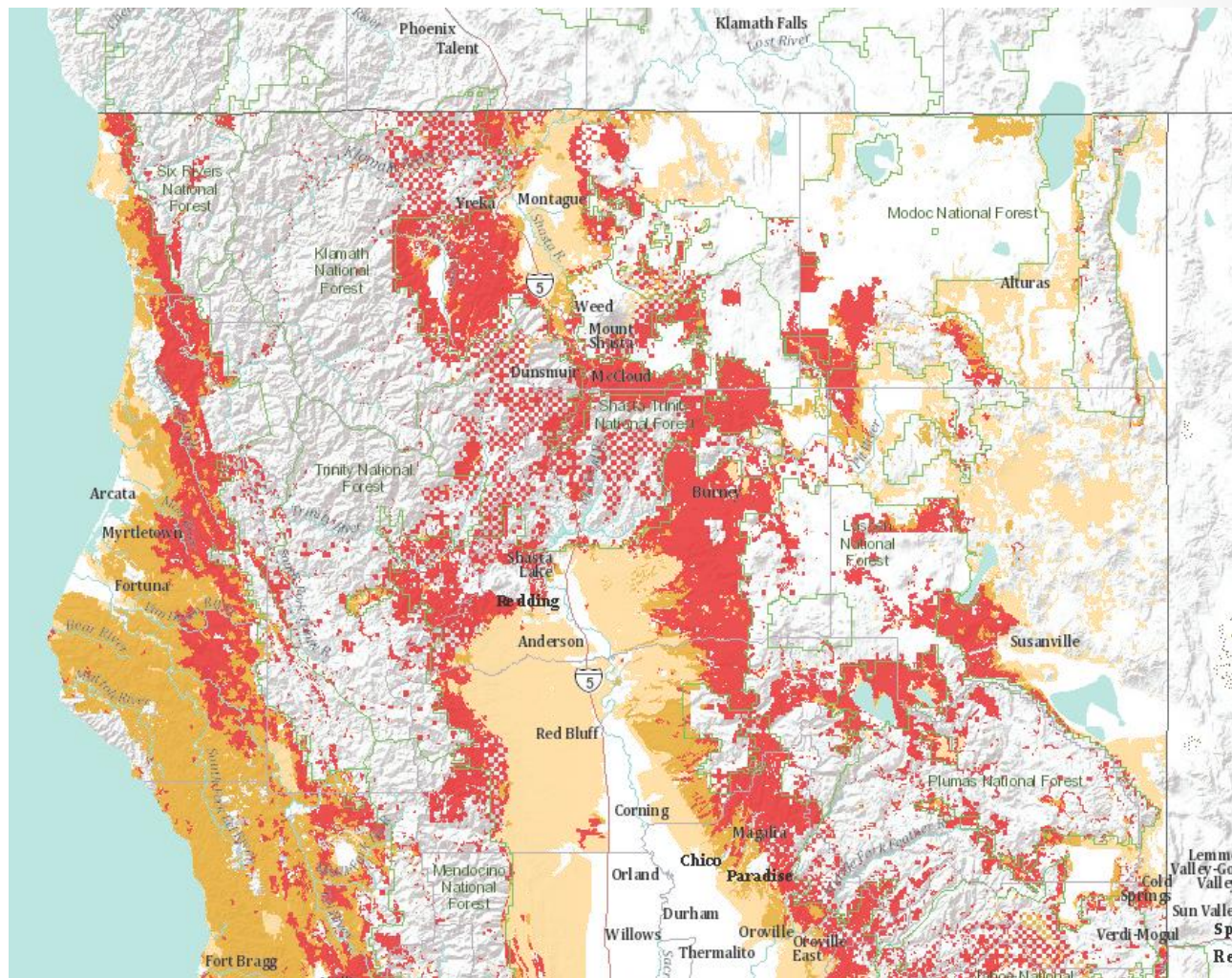
# Taking Resilience Action:

## Adopt a Local Hazard Mitigation Plan (LHMP)

- Creates proactive strategy for resilience
- Required for FEMA mitigation and recovery grants
- Identifies potential mitigation strategies
- If adopted with the general plan, state may pay local match for post-disaster grants
- Without an LHMP, recovery is likely to be costlier and slower

# Taking Resilience Action: Mitigate Wildfire Hazards in SRAs

*MyPlan layer:  
Fire Hazard  
Severity Zones,  
CALFIRE State  
Responsibility  
Areas (SRAs)*



# Taking Resilience Action: Act on Coastal Mitigation Strategies

- Harden coastline – seawalls, levees
- Prohibit development in hazard areas – beachfront, bluffs, floodplain
- Improve evacuation
- Acquire coastal open space
- Re-engineer infrastructure
- Become tsunami ready



Source: EPA



# Taking Resilience Action: Implement Flood Hazard Mitigation

- Buy out hazardous properties



Source: City of Roseville

- Elevate structures

Elevated home,  
New Orleans,  
January 2008



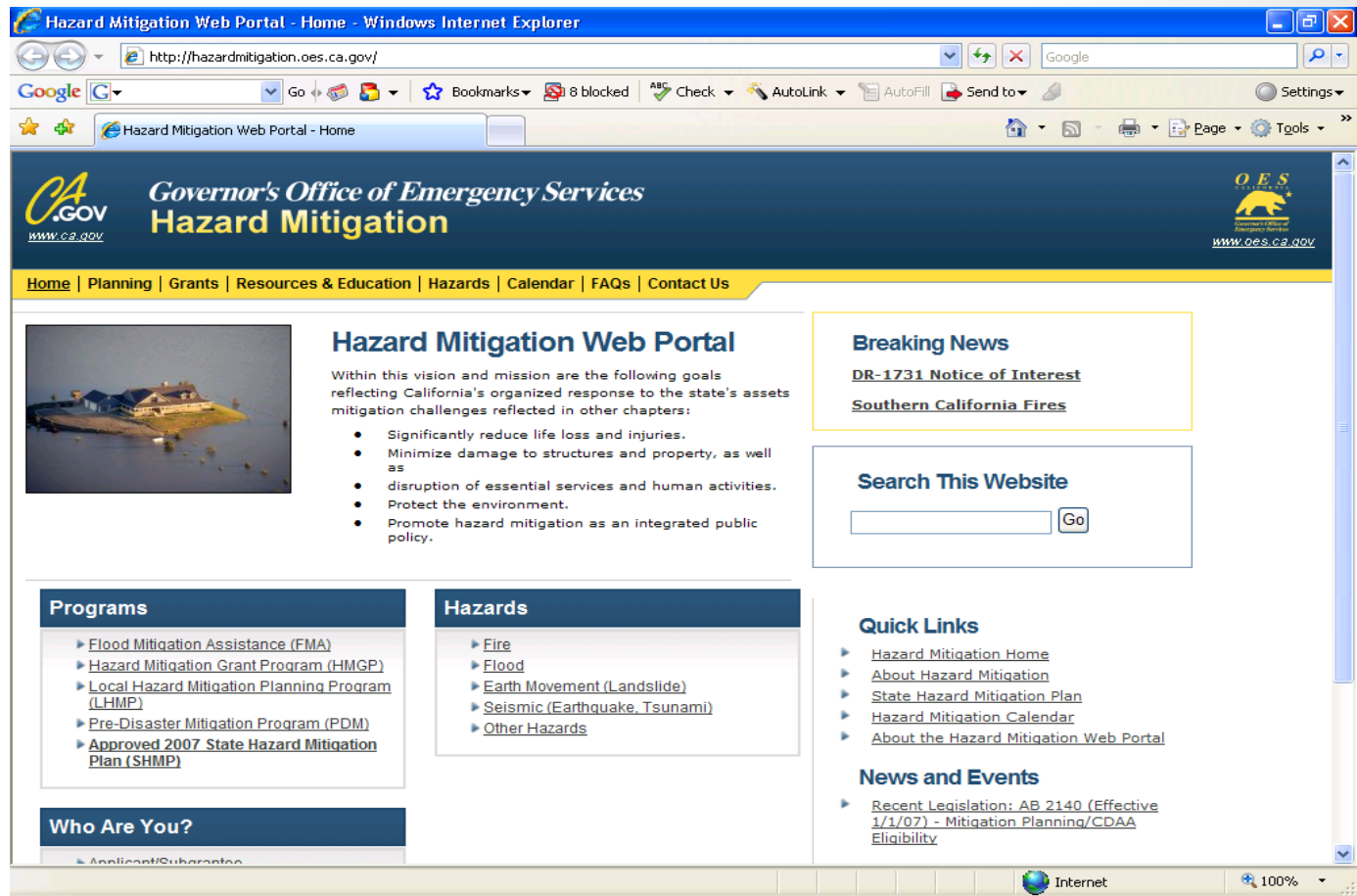
Source: K. Topping

# Climate Adaptation Challenges

- Climate change skepticism
  - State policy: climate change is real and human-caused
- Insufficient funding
  - Speak up – advocate what is needed
- Better coordination
  - Make the first move
  - Bring others along
- Looking to the future
  - Talk to emergency managers, community planners, stakeholders, and leaders

# Questions?





<http://hazardmitigation.calema.ca.gov/>

**Julie Norris**

**Hazard Mitigation Planning Division**

[Julie.Norris@calema.ca.gov](mailto:Julie.Norris@calema.ca.gov)

**(916) 845-8160**





# Information Resources:

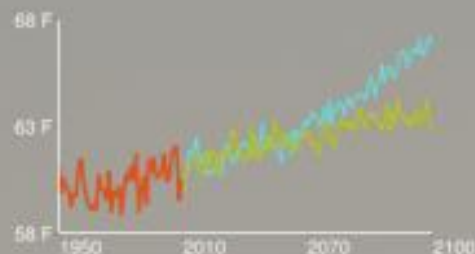
## MyPlan: New Local Planning Tool

Cal OES-CNRA  
sponsored  
online single source  
GIS map server for  
existing multi-source  
hazards mapping



### View Local Profiles

QUICKLY EXPLORE CLIMATE  
PROJECTIONS FOR YOUR LOCAL AREA



### Explore Climate Tools

INTERACTIVE MAPS & CHARTS



SEA LEVEL RISE

### About Cal-Adapt



WHAT'S NEW?



WHAT'S TO COME?



FAQS

### Access Data

ACCESS THE RAW DATA USED IN  
CAL-ADAPT



Select and download data in a variety of  
tabular and GIS formats

### Resources

INFORMATION, ARTICLES & LINKS



Find out more about how climate change  
in California is relevant to your community

### Community

PARTICIPATE IN COMMUNITY BASED  
TOOLS AND ACTIVITIES



Find out how you can share your thoughts  
and findings, communicate with experts,  
and help to collect new data

Tweet

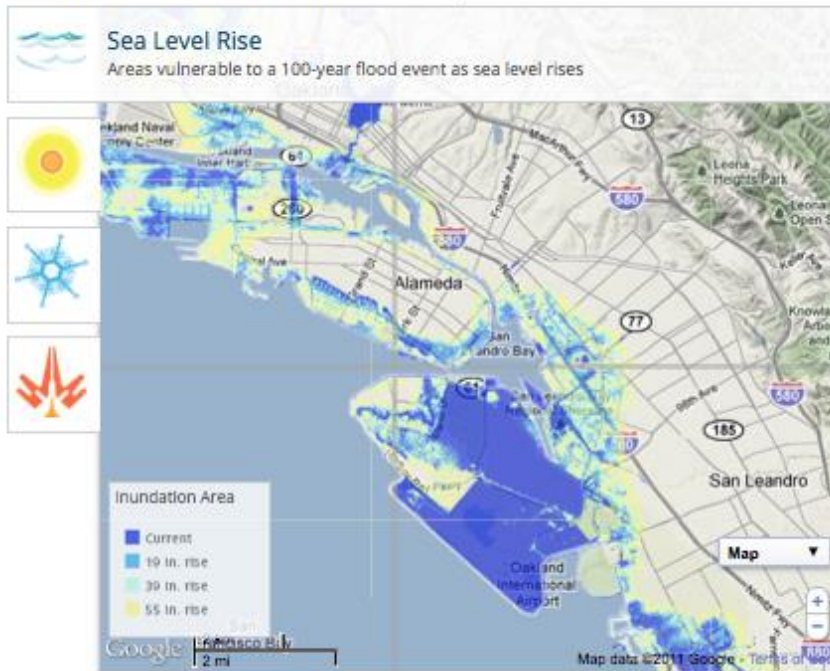
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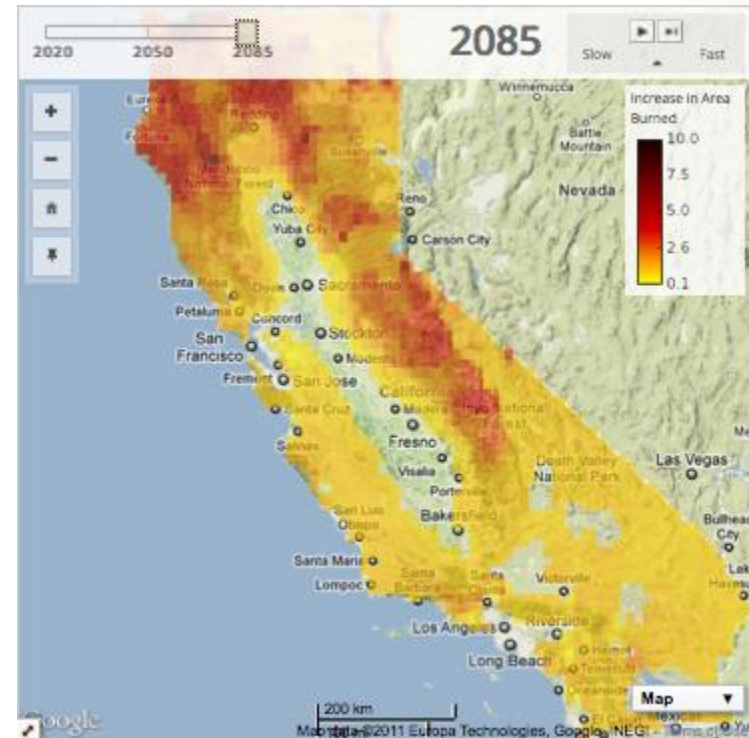
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# Information Resources: Cal-adapt

## LOCAL CLIMATE SNAPSHOTS



Sea Level Rise



Increase in Areas Burned by Wildfire